

**COLD CRANKING SIMULATOR HAVING
HYBRID HEAT TRANSFER SYSTEM**

ABSTRACT OF THE INVENTION

A heat transfer apparatus for use in measuring a rheological property
5 of a test sample includes a receptacle for receiving the test sample and a heat
conveying member in heat transfer relation to receptacle. The heat conveying
member has internal passages extending substantially equidistantly from one
another through at least a portion of the heat conveying member to provide for
counter-flowing circulation of a fluid. A cold cranking simulator includes a hybrid
10 heat transfer system having heat exchanging elements in heat transfer relation to the
receptacle responsive to electric current to transfer heat to or from the receptacle.
The cold cranking simulator further includes a heat conveying member having
internal passages providing for counter-flowing circulation of a fluid.